

# Chapter 7: Classes (A First Look)

## 7.1 Defining Abstract Data Types

## 7.2 Access Control and Encapsulation

### Built-in types

`int`

`int i;`

### User-defined types

`string`

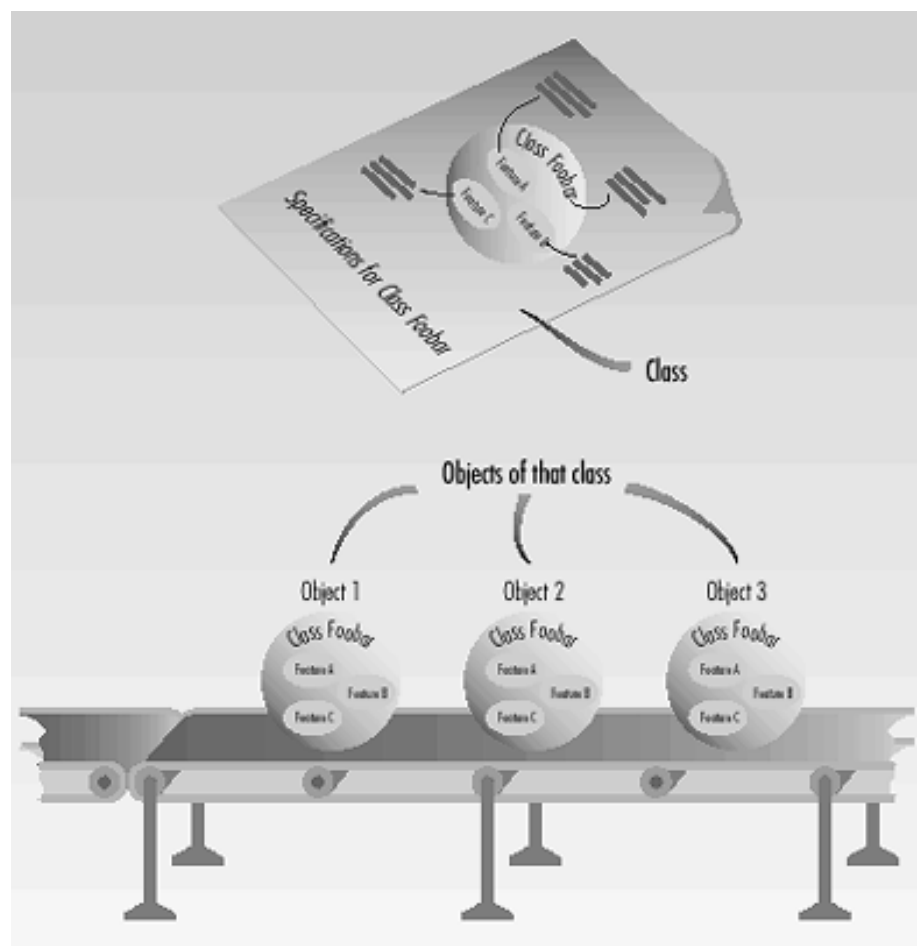
`string s;`

`Sales_item`

`Sales_item s1;`

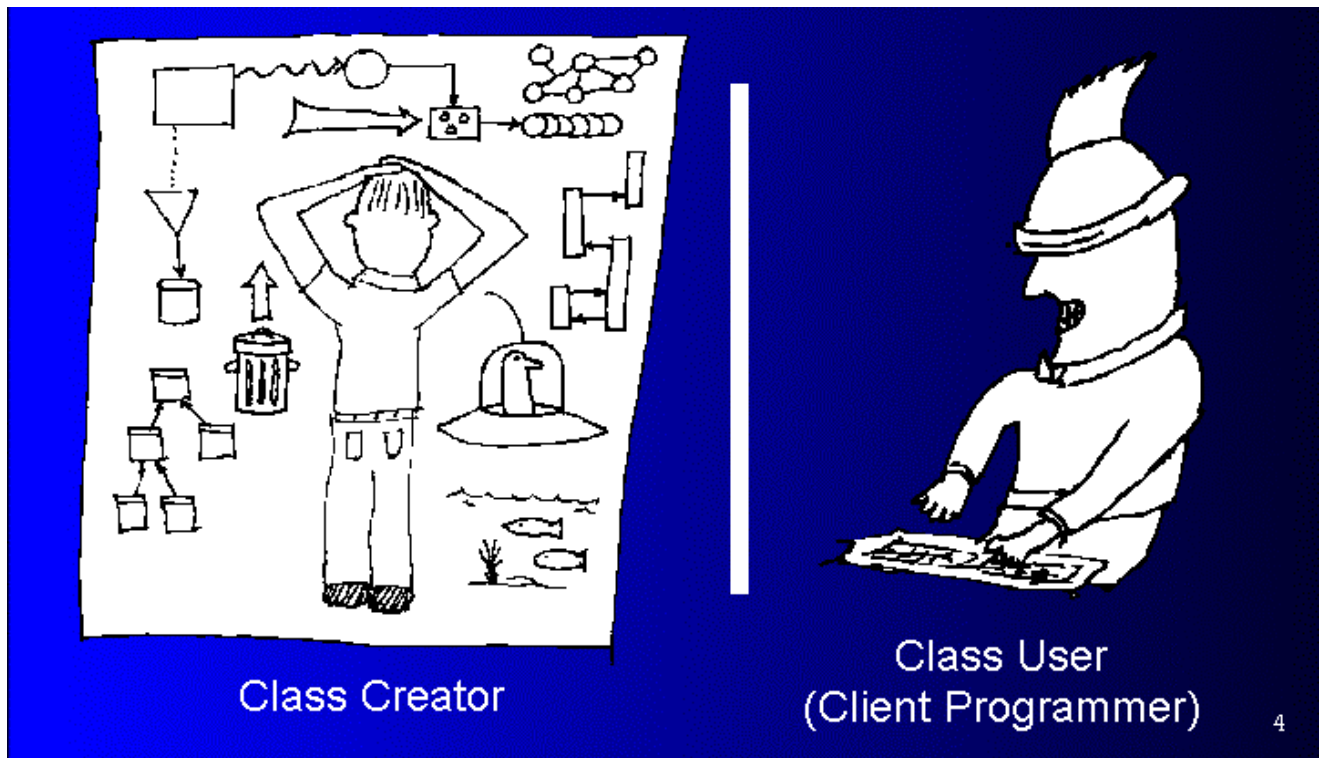
`Sales_data`

`Sales_data s2;`



See Note

# Different Kinds of Programming Role in C++

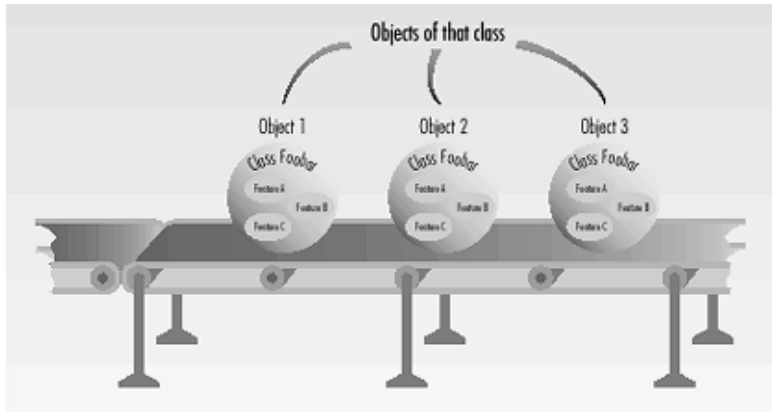


See Note

## Constructor

- Class data members are initialized through a **constructor**.
- Constructor is a special member function with the same name as its class.
  - Unlike other member functions, constructors have **no return type**.
  - Like other member functions they take a (possibly empty) parameter list and have a function body.
  - A class can have multiple constructors. Each constructor must differ from the others via parameters.

- The constructor's parameters specify the initializers that may be used when creating objects of the class type.
- These initializers are used to initialize the data members of the newly created object. Constructors usually should ensure that every data member is initialized.

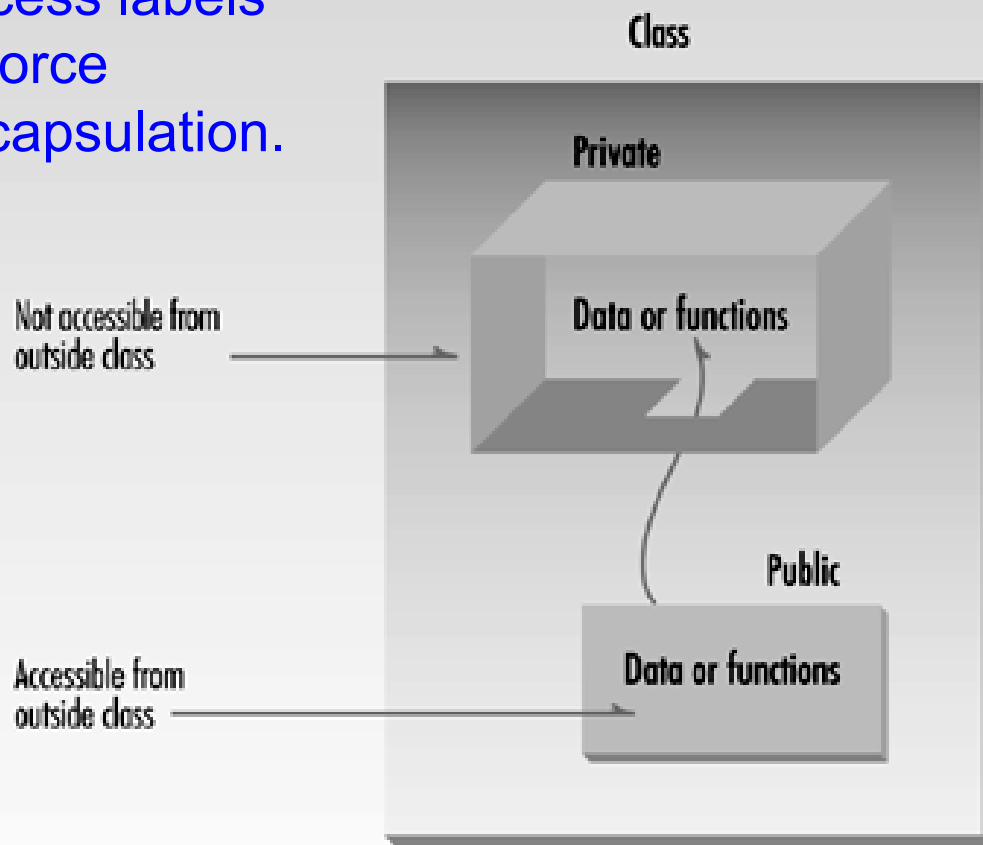


```
string s("hello"); // constructor: takes string literal
string s; // default constructor: empty string
```

- The default constructor is the one that takes no arguments. The default constructor says what happens when we define an object but do not supply an (explicit) initializer:

```
vector<int> vi; // default constructor: empty vector
string s; // default constructor: empty string
Sales_data total; // default constructor: initialize ???
```

Access labels  
enforce  
encapsulation.



- See note

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## Until Next Time

- No HW. (Happy Holidays)
- First midterm, **October 16**, 2014 (考到 10.15 的上課內容).
- [Reading] Chapter 8, 9.